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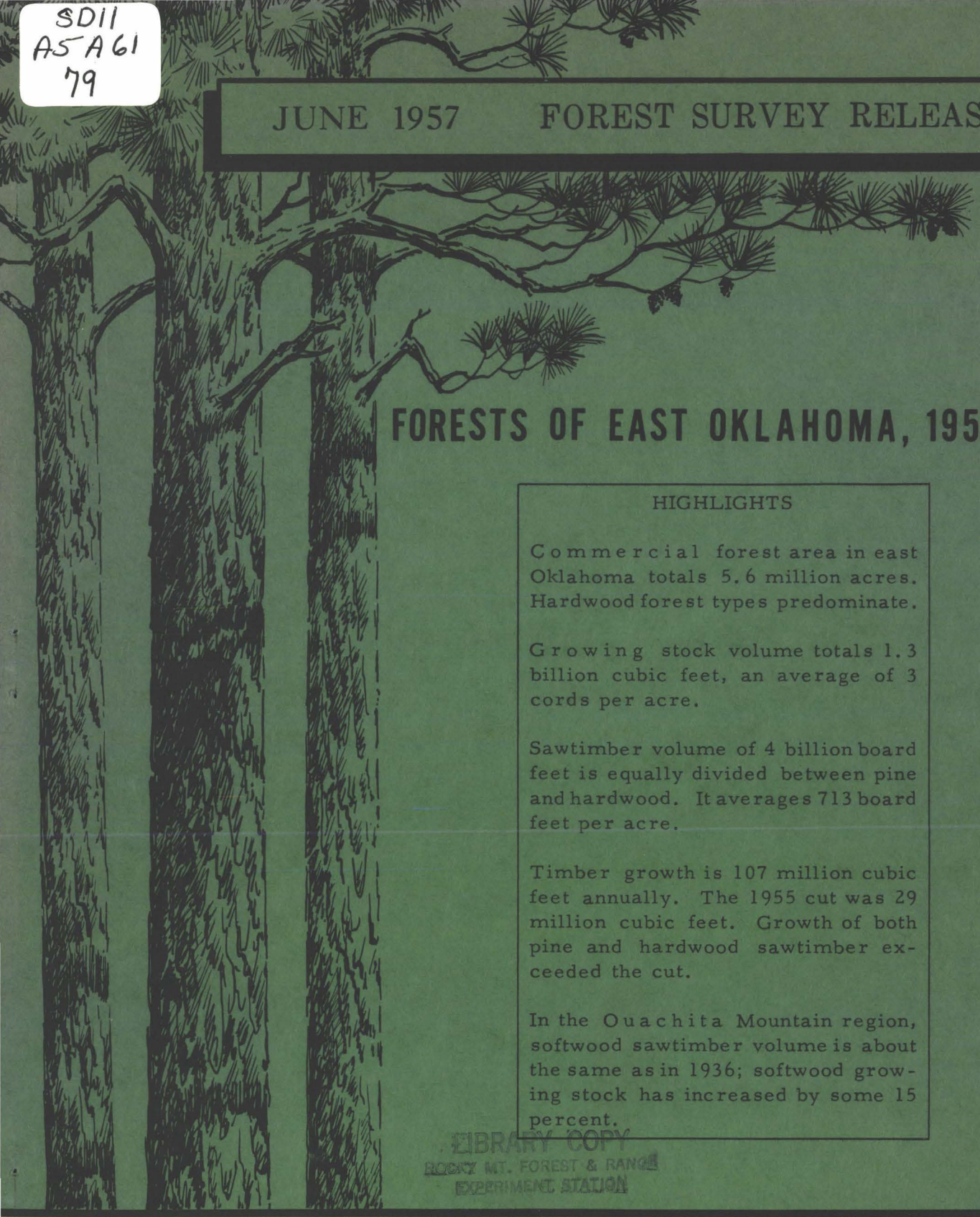
JUNE 1957 FOREST SURVEY RELEASE 79



FORESTS OF EAST OKLAHOMA, 1955-56

HIGHLIGHTS

Commercial forest area in east Oklahoma totals 5.6 million acres. Hardwood forest types predominate.

Growing stock volume totals 1.3 billion cubic feet, an average of 3 cords per acre.

Sawtimber volume of 4 billion board feet is equally divided between pine and hardwood. It averages 713 board feet per acre.

Timber growth is 107 million cubic feet annually. The 1955 cut was 29 million cubic feet. Growth of both pine and hardwood sawtimber exceeded the cut.

In the Ouachita Mountain region, softwood sawtimber volume is about the same as in 1936; softwood growing stock has increased by some 15 percent.

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Southern Forest Experiment Station, New Orleans, Louisiana
Forest Service, U. S. Dept. of Agriculture

FOREWORD

The Forest Survey of east Oklahoma is a part of the national inventory being conducted by the U. S. Forest Service. The purposes of the Survey are (1) to take inventory of the supply of standing timber and other forest products, (2) to ascertain the rate at which this supply is being increased through growth, (3) to determine the rate at which this supply is being diminished through use, and by fire, insects, disease, and other destructive agencies.

The Southern Forest Experiment Station is responsible for the Survey in Oklahoma, Alabama, Arkansas, Louisiana, Mississippi, Tennessee, and Texas. Philip R. Wheeler, chief of the Division of Forest Economics, is in charge of the work.

Completion of field work in east Oklahoma was speeded by the cooperation of Dierks Forests, Inc., and the Oklahoma Division of Forestry. The assistance of these organizations is gratefully acknowledged.

PHILIP A. BRIEGLEB, Director
Southern Forest Experiment Station

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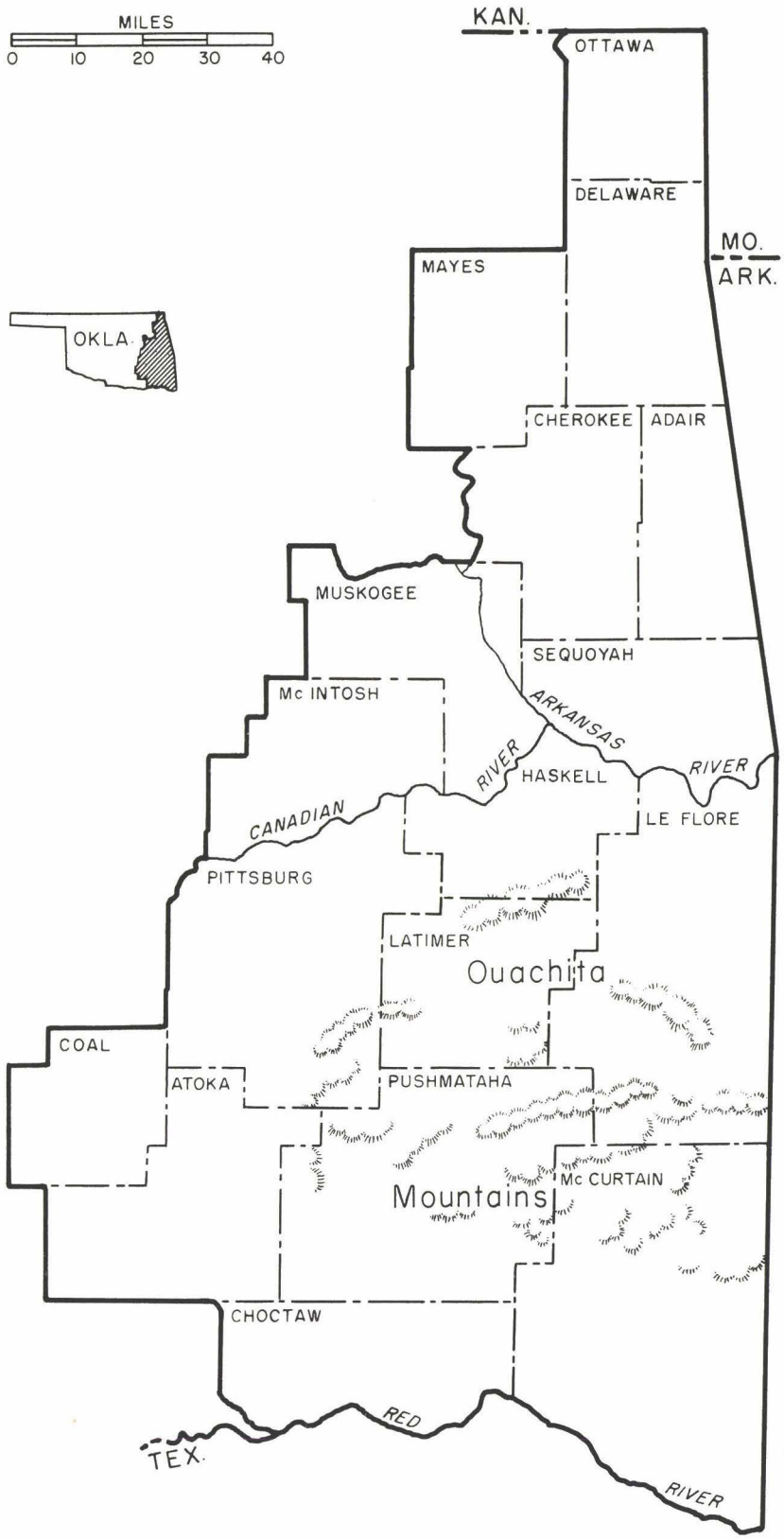


Figure 1.—Counties included in Forest Survey of east Oklahoma.

FORESTS OF EAST OKLAHOMA, 1955-56

This report summarizes the principal findings of that part of the nationwide Forest Survey conducted between 1955 and 1956 in 17 east Oklahoma counties. These counties encompass the main belt of commercial timberland in the State. Five of them, situated in the Ouachita Mountain region, were initially surveyed in 1936. The results of the earlier inventory are drawn upon to show changes in forest conditions in the 5-county area between 1936 and 1956.

The Forest Resource

Forest land predominates.--The 17 east Oklahoma counties shown in figure 1 have a land area of 9.8 million acres. Nearly 60 percent, or 5.7 million acres, is in forest. 1/ Practically all of the forest land is physically capable of producing timber of merchantable size, but the best forest sites are in the Ouachita Mountains and along water courses.

A small part of the forest area--less than 120,000 acres--is regarded as noncommercial, either because it is of extremely low inherent productivity or because it is in some form of public ownership that reserves the timber from cutting.

1/ Definition of terms will be found on page 14.

South of the Canadian River 64 percent of the land is forested. The most heavily timbered portion is in Latimer, Le Flore, Pushmataha, and McCurtain counties. These counties embrace most of the Ouachita Mountain system in the State; the mountains consist of steep parallel ridges formed by the faulting of thick sandstone layers. Too rough for agriculture in many sections, these four counties contain almost half of the total forest acreage in east Oklahoma. Here, too, is concentrated virtually all of the industrially owned forest land in the State and much of the publicly held forest.

The 8 counties north of the Canadian River, though 49-percent forested, are characterized by a largely agricultural economy. Timber is of secondary interest--most of the volume cut is for nonindustrial use such as fuelwood. The Ozark Plateau, which extends over most of the northeastern counties, is a region of moderate hills with deep, narrow valleys and numerous streams.

Of the commercial forest land in east Oklahoma, wood-using industries own 17 percent, farmers 29, and other private owners 43. The remaining 11 percent is held by public agencies. Much of the forest acreage classified as public consists of lands allotted in trust to individual Indians.

A notable feature of land ownership (as in many parts of the South) is the great number of individuals who own small tracts. More than 75 percent of the privately owned forest land is in holdings of less than 5,000 acres and most of it is in tracts of under 500 acres. With such an ownership pattern, it is apparent that decisions of small woodland owners have an important influence upon the timber resource.

Hardwood types widespread.--Seven out of every ten acres of commercial forest land are in hardwood cover types. Bottomland forests comprise a relatively small area, less than 370,000 acres. But in the uplands, forests characterized by various oaks and hickories form the prevailing cover on 3.7 million acres; black and post oaks together make up close to half of the net cubic volume in this upland type. Shortleaf pine is most extensive in the Ouachita Mountains and, in pure stands or in mixture with various hardwoods, occurs on 1.6 million acres (fig. 2).

Young stands most prevalent.--Stands of predominantly young timber are found on 88 percent of the forest land (fig. 3). About half of this acreage is in poletimber stands. The rest is chiefly seedling and sapling stands that have recently established themselves on abandoned fields or on heavily cut or severely burned areas.

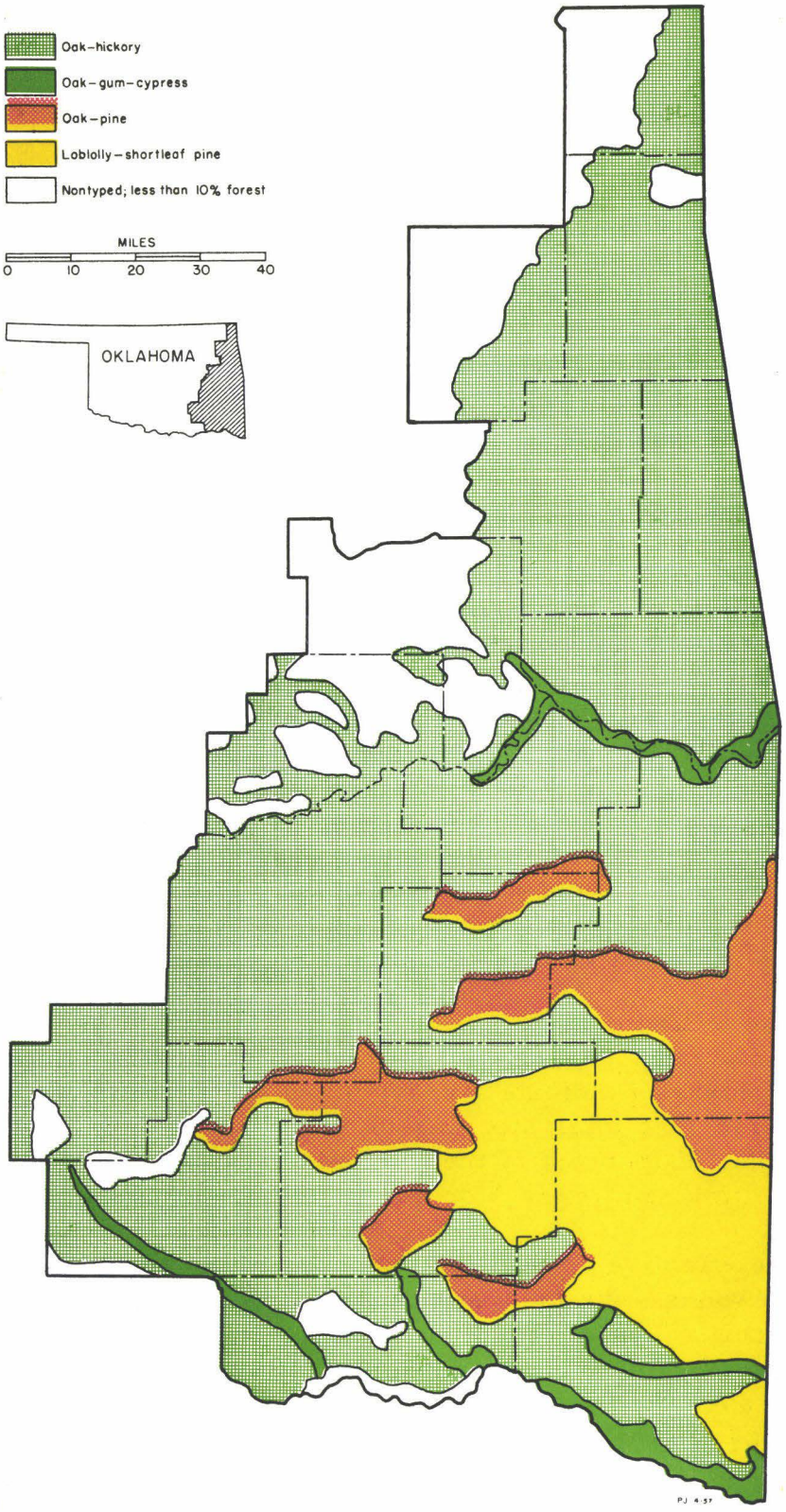


Figure 2.—Major forest types in east Oklahoma.

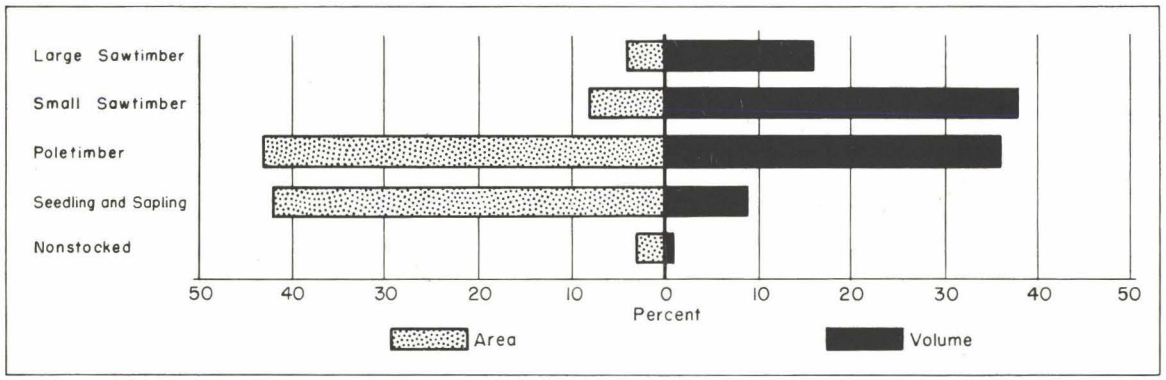


Figure 3. --Commercial forest area and sawtimber volume by stand-size class.

That stands supporting a minimum of 1,500 board feet per acre make up only 12 percent of the forest area reflects to a large extent the impact of past heavy use, as well as relatively low-quality sites. The loblolly-shortleaf pine type has the highest proportion of its area in sawtimber stands--36 percent. The widespread oak-hickory type runs mostly to small stands, only 3 percent of its area being in sawtimber. Regionally, the Ouachita Mountains embrace the great bulk of the sawtimber acreage--over 80 percent.

Nearly half the forest well stocked.--Tree stocking, as measured by the Forest Survey, indicates the extent to which growing space is effectively utilized by sound, well-formed trees of commercial species. The forests of east Oklahoma are comparable in this respect to the adjacent forest regions of Arkansas.

Close to half of the commercial forest land has at least 70 percent of full stocking. As is evident from the preceding discussion, this does not necessarily indicate a heavy stand of merchantable timber, but rather implies that total stocking of trees--both small and large--is good. Another 33 percent of the forest is medium stocked. On the remaining 1.2 million acres stocking ranges from none to 39 percent.

More effective use of growing space is impeded by large numbers of cull hardwoods--one in every two hardwoods of poletimber size or larger is a cull. Though stocking is already low on many areas, little will be gained by leaving this accumulation of cull trees in the woods. Much of the sound volume in cull hardwoods could be used for low-value items such as fuelwood or farm fence posts if demand were sufficient. But the quantity is so large and the problem so widespread that invest-

ment in noncommercial deadening appears to be the only effective way of reducing this overburden and making more growing space available for desired species.

Growing stock exceeds billion cubic feet.--East Oklahoma's commercial forest land supports a growing stock of 1.3 billion cubic feet, an average of 3 cords per acre. Nearly two-fifths of the total is softwood, which is heavily concentrated in the Ouachitas.

Shortleaf pine makes up 96 percent of the softwood volume. Loblolly pine and eastern redcedar account for the rest. Among hardwoods, post oak leads with 27 percent of the volume. All other oaks add up to 28 percent, hickory to 17 percent, and other hardwoods to 28 percent.

Not included in the growing-stock estimate is an additional 864 million cubic feet of sound wood volume that is largely unmerchantable. Of this, 18 percent is in hardwood limbs, 81 percent is in cull trees, and the remainder is in salvable dead trees.

Sawtimber volume 4 billion board feet.--The volume of sawtimber in east Oklahoma now stands at 4 billion board feet, equally divided between softwood and hardwood (fig. 4).

The prevailing small size of hardwood sawtimber trees limits the use that industry can make of them (table 1). To illustrate, 48 percent of the 2 billion board feet of hardwood

Table 1.--Sawtimber volume by log grade and tree diameter, 1955-56

Species group and d.b.h. class (inches)	All grades	Grade 1	Grade 2	Lower grades
	----- Million board feet -----			
Softwood:				
10 to 12	1,019.0	...	15.7	1,003.3
14 to 18	912.5	...	229.5	683.0
20 and up	61.2	8.6	14.3	38.3
Total	1,992.7	8.6	259.5	1,724.6
Hardwood:				
12	520.6	...	...	520.6
14 to 18	1,040.0	3.0	165.9	871.1
20 and up	462.8	91.3	132.1	239.4
Total	2,023.4	94.3	298.0	1,631.1
All classes	4,016.1	102.9	557.5	3,355.7

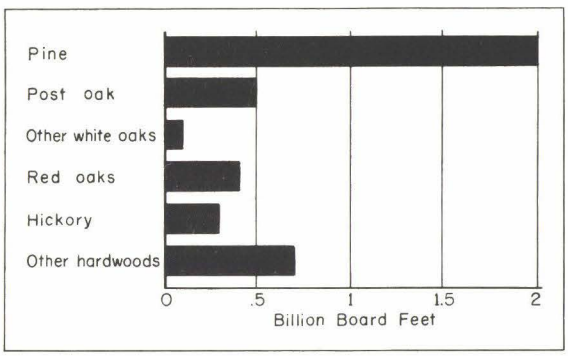


Figure 4.--Sawtimber volume by species.

sawtimber is in trees of the 12- to 14-inch diameter classes. Such trees are too small to yield significant amounts of Grade-2 and better logs--that is, logs that will cut out a substantial proportion of No. 1 Common and Better lumber. This lack of quality restricts the utility of these trees to low-value products such as heavy structural material, crating, crossties, and farm lumber. But many of them can improve in grade and utility if permitted to grow to larger sizes. In hardwoods 20 inches and larger in diameter, for example, nearly half of the volume is in Grade-2 and better logs.

Most of the softwood also grades low, mainly because the trees are small. But in softwoods low grade does not generally prevent profitable cutting, although it limits the output of quality lumber and returns to the timber grower.

Net annual growth 107 million cubic feet; 1955 timber cut 29 million cubic feet.--Fire, insects, disease, and other natural agencies annually kill about 15 million cubic feet of timber in east Oklahoma, of which 37 million board feet is sawtimber. While precise information on mortality by causal agent is not available, it appears that much mortality is drought-induced, especially among red oaks.

When losses from all causes are allowed for, net growth in east Oklahoma forests amounts to 107 million cubic feet of timber annually, including 245 million board feet of sawtimber. In 1955, when the latest cutting statistics were compiled, logging removed 29 million cubic feet of timber, including 115 million board feet of sawtimber. Much of the uncut annual increment is on hardwoods that are too small or too poor in quality to be of commercial use at present.

Net growth of both pine and hardwood sawtimber exceeded the 1955 cut. For sawtimber trees alone, net growth averages some 44 board feet per acre. But in softwood types (chiefly shortleaf pine) net growth is 130 board feet per acre, as compared to 10 board feet in hardwood types.

The notably small board-foot growth in hardwood types is no doubt partly attributable to the relatively low inherent productivity of these sites. But it is an indication, too, that hardwoods of sawtimber size are comparatively few in number. Only 5 percent of the commercial forest acreage in hardwood types has sufficient sawtimber trees to make up 1,500 board feet per acre. The rest of the hardwood acreage supports stands of smaller size that contain few, if any, merchantable

trees. If protected from fire and premature harvesting, however, these young-growth areas could contribute to a renovated sawtimber resource.

It is reasonable to assume that with the application of minimum forestry practices the net annual increment of growing stock in east Oklahoma might eventually be raised from 19 cubic feet per acre to at least 40 cubic feet. Eliminating cull hardwoods alone, for example, would come close to doubling the growing space available for thrifty timber. Under intensive management an even higher average growth is probable. Attaining an increased level of growth would, in the long run, enable the forests to contribute more fully to the local economy.

Sawlogs are chief industrial timber use.--The output of timber commodities in east Oklahoma is about equally divided between softwood and hardwood. Fuelwood and sawlogs each account for some two-fifths of the total production. Fence posts, pulpwood, veneer logs, cooperage bolts, handle stock, and poles make up most of the rest (fig. 5).

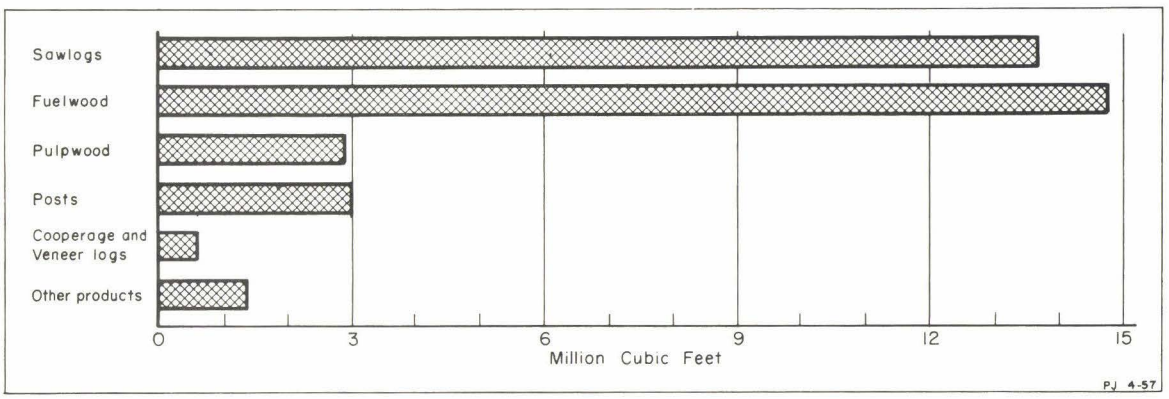


Figure 5.--Output of timber products, 1955.

The bulk of the lumber is sawn at 5 mills, each cutting more than 3 million board feet annually. Though a close count of smaller mills is not available, it is estimated that there are roughly 80. In addition, east Oklahoma's primary forest industries include one semichemical woodpulp mill of 60 tons daily capacity; one tight cooperage plant; 4 handle-stock mills; one charcoal plant; and 12 wood-preserving plants. Most of the preserving plants are of the nonpressure type and treat largely pine fence posts (fig. 6).

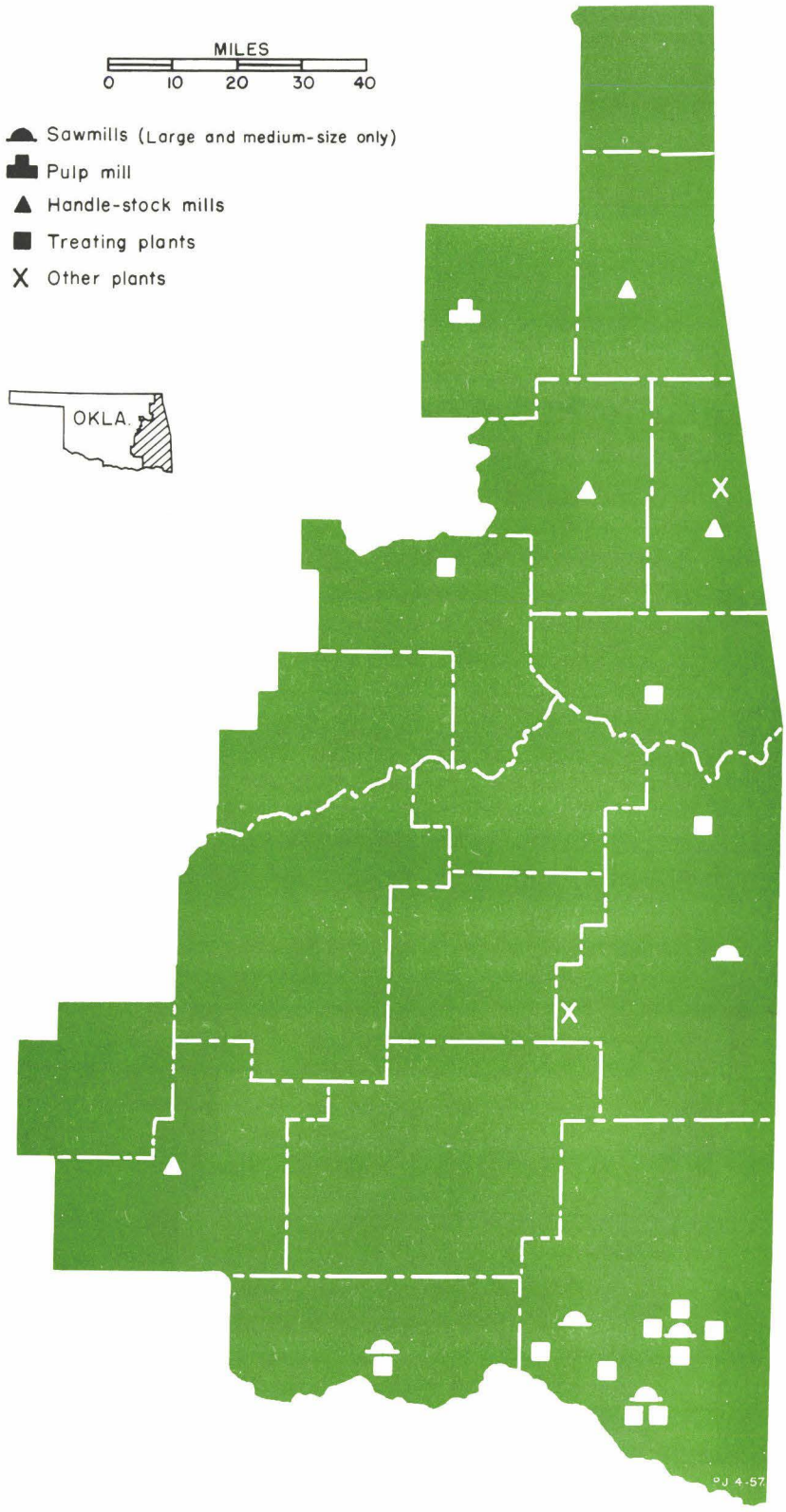


Figure 6.—Location of primary wood-using plants in east Oklahoma, 1955.

Timber Trends in the Ouachitas

Five counties--Haskell, Latimer, Le Flore, McCurtain, and Pushmataha--in the Ouachita Mountain region were initially inventoried in 1936. Thus, for this portion of Oklahoma, two Forest Surveys are available from which to judge trends in the timber resource. It should be emphasized that trends in the Ouachitas are not indicators of resource changes elsewhere in Oklahoma--both the prevailing timber types and pattern of land ownership differ considerably from the rest of the commercial timber belt. In the 5-county area, shortleaf pine forms the prevailing forest cover; elsewhere upland hardwoods predominate. The 5 counties have a sizable area in national forest and industrial holdings; elsewhere such ownership is negligible.

The resurveyed area is 72 percent forested. Commercial forest land totals nearly 3 million acres, virtually the same as in 1936. The volume of sawtimber is about 3 billion board feet, of which two-thirds is pine. It averages 1,030 board feet per acre, considerably more than the 380 found in the forests over the rest of east Oklahoma.

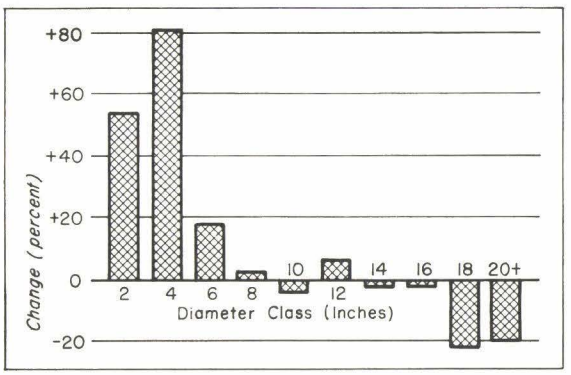


Figure 7.--Change in number of hardwood trees between Surveys.

It will be noted in figures 7 and 8 that numbers of trees by diameter class changed greatly during the interval between Surveys. Large hardwoods (mostly oaks) declined in number but total hardwood volume is about the same as in 1936. More significant, however, are the indicated changes for softwoods that denote the gradual liquidation of the old-growth pine and a build-up in second-growth volume.

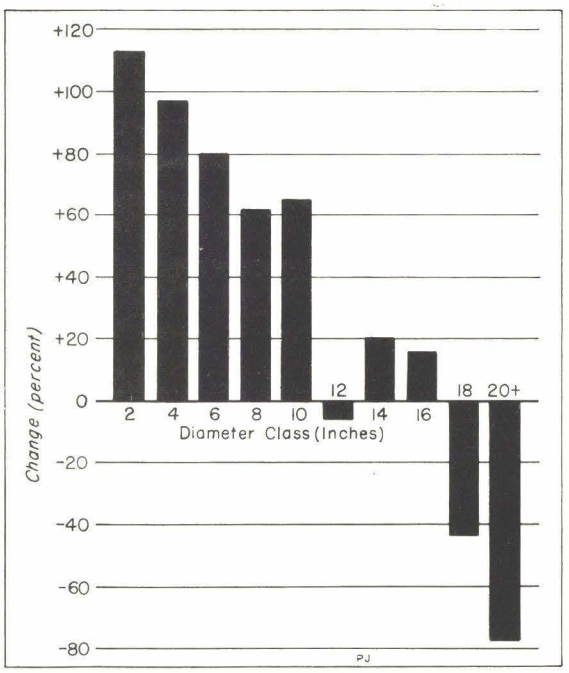


Figure 8.--Change in number of softwood trees between Surveys.

Between 1936 and 1956 there was a decline of some 80 percent in the volume of softwoods (chiefly old-growth pine) 20 inches and larger in diameter. In 1936, trees of these sizes made up about 14 percent of the softwood sawtimber volume. By 1956, only 3 percent was in large trees.

In the middle sizes--i.e., down to 10 inches--numbers of softwoods have increased noticeably in most classes; a major portion of this timber is found on national forest land and industrial holdings.

In smaller diameters softwood increases have been marked--some 100 percent in 2- to 4-inch trees, 70 percent in 6- to 8-inch trees. Despite the increase in percentage of small trees, actual numbers are somewhat less than might be expected. This appears to be due partly to a deficiency of younger age classes at the time of the initial Survey and partly to widespread commercial fence-post cutting in the 4- to 8-inch diameters during the postwar period.

The net effect of changes in stand structure is that the 5-county area has about as much softwood sawtimber today as 20 years ago. Too, volume of softwood growing stock (which includes pines down to 5.0 inches in diameter) has increased by 15 percent.

The build-up in softwood volume reflects to a considerable extent the fact that the managers of the industrial and national forest lands improved the stocking of shortleaf pine. These holdings, though embracing only two-fifths of the commercial forest acreage, support four-fifths of the softwood volume.

Enhancing Forest Productivity

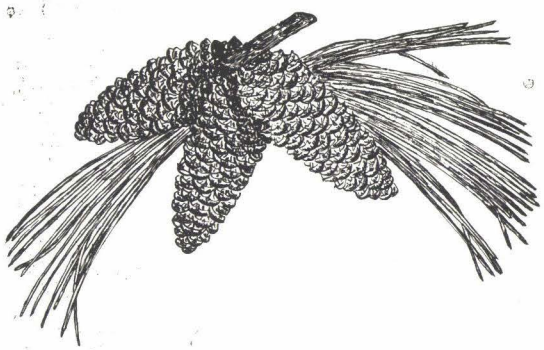
Development of east Oklahoma's timber resources to greater productivity is no small task. Outside of the Ouachita Mountains, present forest stands are characterized by very low levels of growth and stocking of desirable trees. Increased needs for wood by the expanding pulp industry in neighboring States may stimulate wider application of constructive forestry measures that would contribute to increasing future timber supplies. Convincing small landowners of the growth potential of their woodlands is basic to such forward movement.

Of the 5.6 million commercial forest acres in east Oklahoma, the Forest Survey classified 3.7 million as pine sites. This includes all of the forested uplands where pine is present or where there is

evidence that pine was present formerly. More than 2 million acres of pine sites have neither adequate pine stocking nor an adequate pine seed source; planting or direct seeding to pine will be required to make them fully productive. The rest of the pine sites either have sufficient stocking or else have enough seed trees to assure eventual natural restocking to pine. The Survey found, too, that nearly 1.5 million acres of pine sites are rather heavily encumbered with cull hardwoods--that is, a third or more of each acre is dominated by culls.

Adequate fire protection is an essential first step to better forest management. Some 3.9 million acres of forest land, largely in the Ouachitas, are presently under organized protection.

It is evident that greatly increased emphasis on remedial measures such as cull hardwood control, restocking idle acres, and fire protection is needed in order to raise the productivity of the forests of east Oklahoma. This need looms largest on the 4 million acres of commercial forest in private nonindustrial holdings.



Accuracy of the Survey

The 1955-56 data on forest acreage and timber volume were secured by a systematic sampling method involving a forest-nonforest classification on aerial photographs and on-the-ground measurements of sample plots. The sample plots were taken in pairs at and near the intersections of a grid of lines spaced 4.24 miles apart.

Accuracy of the estimates may be affected by two types of errors. The first stems from the use of a sample to estimate the whole and from variability of the items being sampled. This type is termed sampling error; it is susceptible to a mathematical evaluation of the probability of error. The second type of error derives from mistakes in measurement, judgment, arithmetic, or recording, and from limitations of method or equipment. Effects of this second type of error--often referred to as reporting or estimating error--cannot be appraised mathematically, but the Forest Survey constantly attempts to hold such error to a minimum by proper training and good supervision, and by emphasis on careful work.

Statistical analysis of the data indicates a sampling error of plus or minus 0.7 percent for the estimate of total forest area, 4.2 percent for total cubic-foot volume, and 5.7 percent for total board-foot volume. As the acreage and volume totals for east Oklahoma are broken down by forest type, species, county, and other subdivisions of the data, the possibility of error increases and is greatest for the smallest items. The order of this increase is suggested in the following tabulation, which shows the sampling error to which the estimates are liable two chances out of three.

Forest area		Cubic volume		Board-foot volume	
Size of area sampled	Sampling error	Volume sampled	Sampling error	Volume sampled	Sampling error
M acres	Percent	Million cu. ft.	Percent	Million bd. ft.	Percent
6,000	0.7	1,000	4.8	4,000	5.7
4,000	.8	500	6.8	2,000	8.1
2,000	1.2	200	10.8	500	16.1
500	2.4	100	15.2	300	20.9
100	5.3	50	21.5	200	25.5

County data on timber volume have been included in the report to permit grouping of counties into any desired combinations. For this purpose, groups of counties containing a million acres or more of forest land are recommended.

Growth estimates were derived from radial-growth measurements and mortality data taken on sample plots. No attempt was made to calculate sampling error in these estimates.

Estimates of annual cut are based on studies conducted during the period of forest inventory. The sampling error to which the total cubic-foot estimate of annual cut is liable, on a probability of two chances out of three, is plus or minus 5.6 percent.

In computing the changes that took place between 1935-36 and 1955-56 in the Ouachita Mountain region, the data from the first Forest Survey were adjusted to make them as closely comparable as possible to data from the second Survey. This was necessary because of certain basic differences between the two sets of data. In every case, the data from the first Survey were adjusted to conform to the standards of the second Survey before the change was computed.

Definition of Terms

Forest Land

Forest land. Includes: (a) land which is at least 10 percent stocked by trees of any size and capable of producing timber or other wood products, or of exerting an influence on the climate or on the water regime; (b) land from which the trees have been removed to less than 10 percent stocking and which has not been developed for other use; (c) afforested areas.

Commercial forest land. Forest land which is (a) producing, or is physically capable of producing, usable crops of wood (usually sawtimber), (b) economically available now or prospectively, and (c) not withdrawn from timber utilization.

Noncommercial forest land. Forest land (a) withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land and (b) incapable of yielding usable wood products (usually sawtimber) because of adverse site conditions, or so physically inaccessible as to be unavailable economically in the foreseeable future.

Tree Species

Commercial species. Includes species that normally have value for commercial timber products; excludes so-called weed or noncommercial species such as blackjack oak, scrub post oak, blue beech, sourwood, etc.

Softwoods. Coniferous species, of which the most numerous is shortleaf pine (*Pinus echinata*).

Hardwoods. Broadleaved species, of which the most numerous are the oaks (*Quercus* spp.).

Forest Type

Forest type is determined upon the basis of the predominant species as indicated by cubic volume for sawtimber and poletimber stands, and number of trees for seedling-sapling stands.

Loblolly-shortleaf pine. Forests in which 50 percent or more of the stand is loblolly pine, shortleaf pine, or other southern yellow pines excepting longleaf or slash pine, singly or in combination. (Common associates include oak, hickory, and gum.)

Oak-pine. Forests in which 50 percent or more of the stand is hardwoods, usually upland oaks, but in which southern pines make up 25 - 49 percent of the stand. (Common associates include gum and hickory.)

Oak-hickory. Forests in which 50 percent or more of the stand is upland oaks or hickory, singly or in combination, except where pines comprise 25 - 49 percent in which case the stand would be classified "oak-pine." (Common associates include elm, maple, and black walnut.)

Oak-gum-cypress. Bottomland forests in which 50 percent or more of the stand is tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, except where pines comprise 25 - 49 percent in which case the stand would be classified "oak-pine." (Common associates include cottonwood, willow, ash, elm, hackberry, and maple.)

Elm-ash-cottonwood. Forests in which 50 percent or more of the stand is elm, ash, or cottonwood, singly or in combination. (Common associates include willow, sycamore, beech, and maple.)

Class of Timber

Sawtimber trees. Live trees of commercial species at least 9.0 inches d.b.h. in softwoods and 11.0 inches d.b.h. in hardwoods, that contain at least a 12-foot merchantable butt log--or, if the butt log is a cull, at least 50 percent of the gross sawlog volume is in merchantable logs. To be merchantable, a log must meet the following requirements:

(a) In softwoods, logs having a minimum 6-inch small-end diameter inside bark and at least one-third sound, with sweep or crook not exceeding two-thirds the small-end diameter.

(b) In hardwoods, logs having a minimum 8-inch small-end diameter inside bark and which meet the specifications of a standard lumber log or a tie and timber log.

Poletimber trees. Trees of commercial species which meet regional specifications of soundness and form, and which are of the following diameters at breast height: softwoods 5.0 to 9.0 inches; hardwoods 5.0 to 11.0 inches. (Such trees will usually become sawtimber trees if left to grow.)

Seedling and sapling trees. Live trees of commercial species less than 5.0 inches in diameter at breast height and of good form and vigor.

Cull trees. Live trees of sawtimber or poletimber size that are unmerchantable for sawlogs now or prospectively because of defect, rot, or species.

Rotten cull trees. Live trees of sawtimber or poletimber size which fail to meet regional specifications of proportion of sound volume to total volume.

Sound cull trees. Live trees of sawtimber or poletimber size which meet regional specifications of freedom from rot but will not make at least one merchantable sawlog now or prospectively according to regional specifications because of roughness, poor form, or species.

Hardwood limbs. Limbs of hardwood sawtimber trees and sawtimber-size cull hardwood trees to a minimum diameter of 4.0 inches inside bark.

Stand-size Class

Large sawtimber. Stands with sawtimber trees having a minimum net volume per acre of 1,500 board feet, International 1/4-inch rule, and at least half of this volume in sawtimber trees 15.0 inches d.b.h. and larger.

Small sawtimber. Stands with sawtimber trees having a minimum net volume per acre of 1,500 board feet, International 1/4-inch rule, but which do not meet the specifications for large sawtimber.

Poletimber. Stands failing to meet the sawtimber stand specification, but at least 10 percent stocked with poletimber and larger (5.0 inches d.b.h. and larger) trees and with at least half the minimum stocking in poletimber trees.

Seedling and sapling. Stands not qualifying as either sawtimber or poletimber stands, but having at least 10 percent stocking of trees of commercial species and with at least half the minimum stocking in seedling and sapling trees.

Nonstocked and other areas. Commercial forest land not qualifying as sawtimber, poletimber, or seedling and sapling stands.

Tree Stocking

Stocking is the extent to which growing space is effectively utilized by present or potential growing-stock trees of commercial species. Stands are considered to be well stocked when the percentage of full stocking is 70 or above, medium stocked when the percentage is 40 to 69, poorly stocked when the percentage is 10 to 39, and nonstocked when the percentage is under 10.

Volume

Sawtimber volume. Net volume in board feet, International 1/4-inch rule, of live sawtimber trees to a specified merchantable top.

Growing stock. Net volume in cubic feet of live sawtimber and live poletimber trees from stump to a minimum 4.0-inch top diameter (of central stem) inside bark.

All-timber volume. Net volume in cubic feet of live and salvable dead sawtimber trees and poletimber trees of commercial species, and cull trees of all species from stump to a minimum 4.0-inch top inside bark. Includes bole only of softwoods but both bole and limbs of hardwoods to a minimum 4.0-inch diameter inside bark.

Basal Area

Basal area. Cross-sectional area, including bark, of trees at breast height, measured in square feet.

Diameter

D.b.h. (diameter breast high). Tree diameter in inches, outside bark, measured at 4-1/2 feet above ground.

Diameter class. The 2-inch diameter classes extend from 1.0 inch below to 0.9 inch above the stated midpoint. Thus, the 12-inch class includes trees 11.0 inches to and including 12.9 inches d.b.h.

Growth

Net annual growth of sawtimber. The change during a specified year in net board-foot volume of live sawtimber on commercial forest land resulting from natural causes.

Net annual growth of growing stock. The change during a specified year in net cubic-foot volume of growing stock on commercial forest land resulting from natural causes.

Mortality

Annual mortality. The net volume, excluding salvage, removed from live sawtimber and from growing stock during a specified year through death from natural causes.

Cut

Annual cut of sawtimber. The net board-foot volume of live sawtimber trees cut or killed by logging on commercial forest land during a specified year.

Annual cut of growing stock. The net cubic-foot volume of live sawtimber and poletimber trees cut or killed by logging on commercial forest land during a specified year.

Output

Timber products output. The volume of timber products cut from both growing stock and other sources.

Softwood Log Grades [2]

Softwood log grades are based on the value yield per unit outturn of yard lumber. The value of lumber yield may be expressed relative to the value of No. 2 Common lumber taken as 100 percent. Expressed thus, studies have shown that lumber from grade 1 logs has a value 244 percent as great as No. 2 Common lumber, while the corresponding percentages are 189 percent for grade 2 logs, 142 percent for grade 3 logs, and 107 percent for grade 4 logs.

Hardwood Log Class

Specifications for standard lumber logs (hardwood log grades 1, 2, and 3) are based on suitability for standard factory lumber. [3] Studies have shown that for nearly all species tested, the yield of No. 1 Common and better lumber in grade 1 logs varies from 65 to 80 percent; in grade 2 logs from 40 to 64 percent; and in grade 3 logs from 13 to 36 percent.

Tie and timber logs are suitable for ties, timbers, and certain other construction lumber items. Specifications for tie and timber logs are based chiefly on knot size and log soundness; clear cuttings are not required.

Stand Quality

Fair and better. A stand in which at least four grade-2 or better logs are present per acre.

Poor. A stand in which fewer than four grade-2 or better logs are present per acre.

2/ For detailed specifications of log grades, see "Interim log grades for southern pine." Southern Forest Experiment Station, 18 pp. 1953.
3/ For detailed specifications of log grades, see "Hardwood log grades for standard lumber: proposals and results." U. S. Forest Products Laboratory D1737. 1949.

Detailed Tables for East Oklahoma

The following tables present detailed statistics on the forests of 17 east Oklahoma counties. Included counties are shown in figure 1, on page ii.

Table 2.--Forest and nonforest land, 1955-56

Land use	Commercial forest	
	Thousand acres	Percent
Forest:		
Commercial	5,632.0	57.5
Noncommercial:		
Productive-reserved	35.8	.4
Unproductive	81.2	.8
Total forest	5,749.0	58.7
Nonforest 1/	4,049.4	41.3
All land	9,798.4	100.0

1/ Includes some acreage classifiable as water according to Survey standards of area classification but defined by the Bureau of Census as land.

Table 3.--Commercial forest land by class of ownership, 1955-56

Class of ownership	Commercial forest	
	Thousand acres	Percent
Private:		
Farm	1,636.9	29.1
Other	3,361.8	59.7
Total private	4,998.7	88.8
Public:		
National forest 1/	212.5	3.8
Other federal	357.6	6.3
State 2/	63.2	1.1
Total public	633.3	11.2
All ownerships	5,632.0	100.0

1/ Includes other lands administered by the Forest Service.
2/ County-owned land included with State.

Table 4.--Land area and commercial forest by county, 1955-56

County	All land	Commercial forest	
	Thousand acres	Thousand acres	Percent
Adair	364.2	251.0	68.9
Atoka	634.9	365.1	57.5
Cherokee	500.5	348.7	69.7
Choctaw	501.8	254.3	50.7
Coal	336.6	124.6	37.0
Delaware	460.8	296.6	64.4
Haskell	393.0	182.8	46.5
Latimer	471.7	351.5	74.5
Le Flore	1,008.0	650.9	64.6
McCurtain	1,186.5	917.8	77.4
McIntosh	457.6	145.7	31.8
Mayes	432.6	149.3	34.5
Muskogee	524.8	120.9	23.0
Ottawa	295.0	86.9	29.5
Pittsburg	869.8	412.7	47.4
Pushmataha	910.7	748.2	82.2
Sequoyah	449.9	225.0	50.0
All counties	9,798.4	5,632.0	57.5

Table 5.--Commercial forest land by degree of tree stocking and forest type, 1955-56

Forest type	All stocking	Well stocked	Medium stocked	Poorly stocked	Non-stocked
	---------- Thousand acres ----------				
Softwood types:					
Loblolly-shortleaf pine	1,061.6	828.1	188.4	45.1	...
Oak-pine	517.1	284.7	149.3	83.1	...
Total	1,578.7	1,112.8	337.7	128.2	...
Hardwood types:					
Oak-hickory	3,686.0	1,265.5	1,443.4	903.8	73.3
Elm-ash-cottonwood	73.1	56.9	5.2	11.0	...
Oak-gum-cypress	294.2	100.2	97.1	86.5	10.4
Total	4,053.3	1,422.6	1,545.7	1,001.3	83.7
All types	5,632.0	2,535.4	1,883.4	1,129.5	83.7

Table 6.--Commercial forest land by stand size and forest type, 1955-56

Forest type	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas
			Thousand acres			
Softwood types:						
Loblolly-shortleaf pine	1,061.6	54.9	323.4	494.0	183.4	5.9
Oak-pine	517.1	11.2	45.9	240.4	219.6	...
Total	1,578.7	66.1	369.3	734.4	403.0	5.9
Hardwood types:						
Oak-hickory	3,686.0	57.7	43.9	1,522.2	1,948.5	113.7
Elm-ash-cottonwood	73.1	31.9	11.7	24.0	5.5	...
Oak-gum-cypress	294.2	47.6	22.3	140.3	43.9	40.1
Total	4,053.3	137.2	77.9	1,686.5	1,997.9	153.8
All types	5,632.0	203.3	447.2	2,420.9	2,400.9	159.7

Table 7.--Area of sawtimber stands by stand quality and forest type, 1955-56

Forest type	All qualities	Fair or better	Poor
		Thousand acres	
Softwood types:			
Loblolly-shortleaf pine	378.3	233.3	145.0
Oak-pine	57.1	22.0	35.1
Total	435.4	255.3	180.1
Hardwood types:			
Oak-hickory	101.6	32.8	68.8
Elm-ash-cottonwood	43.6	38.4	5.2
Oak-gum-cypress	69.9	47.6	22.3
Total	215.1	118.8	96.3
All types	650.5	374.1	276.4

Table 8.--Basal area per acre of growing stock and cull trees by forest-type group, 1955-56

Tree class	All types	Softwood	Hardwood
		Square feet	
2- and 4-inch good trees[1/]	7.3	11.7	5.5
Growing stock	20.2	30.1	16.0
2- and 4-inch poor trees	4.7	3.5	5.2
Cull trees	17.1	10.7	19.8
All trees	49.3	56.0	46.5

1/ Includes only sound, well-formed trees.

Table 9.--Total volume by class of timber and species, 1955-56

Species	All timber 2/	Growing stock				Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees		Pole-timber trees		
			Sawlog portions	Upper stems			
	Million cubic feet						
Shortleaf pine 1/	501.6	494.6	339.7	32.9	122.0	...	7.0
Red oaks	311.8	185.0	72.0	26.9	86.1	34.8	92.0
White oaks	583.7	268.3	97.4	28.0	142.9	62.7	252.7
Hickory	234.7	137.7	57.2	18.1	62.4	18.0	79.0
Sweetgum and blackgum	79.7	58.1	28.0	8.8	21.3	3.3	18.3
Other hardwoods	465.0	172.5	85.3	25.2	62.0	39.0	253.5
All species	2,176.5	1,316.2	679.6	139.9	496.7	157.8	702.5

1/ Includes 20.3 million cubic feet of loblolly pine and 1.9 million cubic feet of redcedar.

2/ Sound volume in dead trees considered salvable is not included. This volume totals 3.8 million cubic feet.

Table 10.--Total volume by class of timber and species, 1955-56

Species	All timber 2/	Growing stock				Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees		Pole-timber trees		
			Sawlog portions	Upper stems			
	Thousand cords						
Shortleaf pine 1/	6,688	6,595	4,530	438	1,627	...	93
Red oaks	4,654	2,761	1,075	401	1,285	519	1,374
White oaks	8,712	4,005	1,454	418	2,133	936	3,771
Hickory	3,503	2,056	853	271	932	269	1,178
Sweetgum and blackgum	1,189	867	419	131	317	49	273
Other hardwoods	6,940	2,574	1,273	376	925	581	3,785
All species	31,686	18,858	9,604	2,035	7,219	2,354	10,474

1/ Includes 271 thousand cords of loblolly pine and 25 thousand cords of redcedar.

2/ Sound volume in dead trees considered salvable is not included. This volume totals 57 thousand cords.

Table 11.--Growing stock by species and stand size, 1955-56

Species	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas 1/
	Million cubic feet					
Shortleaf pine 2/	494.6	32.6	275.1	156.7	24.9	5.3
Red oaks	185.0	25.3	21.2	121.6	16.0	.9
White oaks	268.3	10.9	41.1	145.0	68.6	2.7
Hickory	137.7	25.5	13.2	87.6	11.4	...
Sweetgum and blackgum	58.1	9.0	16.8	31.7	.6	...
Other hardwoods	172.5	57.4	28.8	73.3	10.0	3.0
All species	1,316.2	160.7	396.2	615.9	131.5	11.9

1/ Includes areas not classified elsewhere.
2/ Includes 20.3 million cubic feet of loblolly pine and 1.9 million cubic feet of redcedar.

Table 12.--Average volume per acre of growing stock by stand size and forest type, 1955-56

Forest type	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas 1/
	Cubic feet					
Softwood types:						
Loblolly-shortleaf pine	513	889	946	329	122	(2/)
Oak-pine	188	(2/)	691	202	61	...
Average	407	788	914	288	89	(2/)
Hardwood types:						
Oak-hickory	137	480	599	233	48	37
Elm-ash-cottonwood	929	1,194	1,778	375	...	...
Oak-gum-cypress	344	899	520	297	64	60
Average	166	792	754	240	48	43
All types	234	790	886	254	55	75

1/ Includes areas not classified elsewhere.
2/ Sample too small to be reliable.

Table 13.--Sawtimber volume and growing stock by species, 1955-56

Species	Growing stock	Sawtimber
	Million cubic feet	Million board feet
Softwood:		
Shortleaf pine	472.4	1,885.1
Loblolly pine	20.3	107.6
Redcedar	1.9	...
Total	494.6	1,992.7
Hardwood:		
Black and southern red oaks	137.5	302.9
Cherrybark, Shumard and northern red oaks	28.4	80.4
Water oaks	19.1	62.1
White oak (Q. alba)	45.7	101.8
Post oak	220.4	468.6
Other white oaks	2.2	3.8
Pecan	23.8	94.0
Other hickories	113.9	246.4
Sweetgum	36.0	78.5
Blackgum	22.1	84.3
Elm	63.8	158.6
Ash	30.0	74.1
Hackberry	19.1	50.6
Other hardwoods	59.6	217.3
Total	821.6	2,023.4
All species	1,316.2	4,016.1

Table 14. --Distribution of growing stock by species within each forest type, 1955-56

Species	All types	Loblolly-shortleaf pine	Oak-pine	Oak-hickory	Elm-ash-cottonwood	Oak-gum-cypress
			Percent			
Softwood:						
Shortleaf pine	35.9	79.5	31.6	1.7	...	...
Loblolly pine	1.6	3.7	...	...	...	...
Redcedar	.1	.1	.3	.2	...	...
Total	37.6	83.3	31.9	1.9	...	...
Hardwood:						
Black and southern red oaks	10.4	1.8	7.8	23.7	...	...
Cherrybark, Shumard, and northern red oaks	2.2	.8	1.2	3.7	...	4.0
Water oaks	1.5	.3	...	1.3	3.2	8.7
Post oak	16.7	5.8	30.6	31.1	...	2.9
Other white oaks	3.6	3.2	5.4	4.7	...	1.5
Pecan	1.8	...	...	...	9.3	17.3
Other hickories	8.7	1.9	10.8	17.9	.9	2.1
Sweetgum	2.7	1.5	2.0	3.6	3.2	5.3
Black and tupelo gums	1.7	1.2	7.6	1.4	...	.8
Elm	4.8	.2	2.7	6.7	8.4	20.4
Ash	2.3	...	...	1.8	9.3	14.2
Hackberry	1.5	...	...	.6	1.2	15.2
Other hardwoods	4.5	...	...	1.6	64.5	7.6
Total	62.4	16.7	68.1	98.1	100.0	100.0
All species	100.0	100.0	100.0	100.0	100.0	100.0

Table 15. --Growing stock volume by species and county, 1955-56

County	All species	Softwood			Hardwood			
		Total	Southern yellow pines	Other softwoods	Total	Soft hardwoods	Oaks	Other hard hardwoods
				Million cubic feet				
Adair	39.0	4.1	4.1	...	34.9	1.6	27.3	6.0
Atoka	45.7	2.1	2.1	...	43.6	...	30.2	13.4
Cherokee	50.3	5.7	5.7	...	44.6	1.6	30.6	12.4
Choctaw	97.4	...	...	...	97.4	21.3	38.2	37.9
Coal	21.5	...	...	...	21.5	...	5.3	16.2
Delaware	35.3	.3	.3	...	35.0	.6	26.8	7.6
Haskell	45.5	1.1	1.1	...	44.4	21.6	12.6	10.2
Latimer	42.4	17.6	17.6	...	24.8	...	18.7	6.1
Le Flore	166.4	68.5	67.4	1.1	97.9	21.1	48.2	28.6
McCurtain	452.6	279.2	279.2	...	173.4	24.9	93.6	54.9
McIntosh	7.8	...	...	...	7.8	...	4.4	3.4
Mayes	22.6	.7	.7	...	21.9	...	16.7	5.2
Muskogee	29.1	...	...	...	29.1	2.0	7.3	19.8
Ottawa	11.1	...	...	...	11.1	...	6.2	4.9
Pittsburg	28.6	1.2	.7	.5	27.4	...	20.7	6.7
Pushmataha	183.6	111.5	111.2	.3	72.1	5.2	46.8	20.1
Sequoyah	37.3	2.6	2.6	...	34.7	1.7	19.7	13.3
Total	1,316.2	494.6	492.7	1.9	821.6	101.6	453.3	266.7

Table 16. --Sawtimber volume by species and county, 1955-56

County	All species	Softwood			Hardwood			
		Total	Southern yellow pines	Other softwoods	Total	Soft hardwoods	Oaks	Other hard hardwoods
	Million board feet							
Adair	106.3	12.8	12.8	...	93.5	7.3	61.2	25.0
Atoka	105.2	7.8	7.8	...	97.4	...	66.4	31.0
Cherokee	118.5	16.7	16.7	...	101.8	8.5	48.9	44.4
Choctaw	242.5	...	...	...	242.5	64.6	81.0	96.9
Coal	75.0	...	...	...	75.0	...	17.7	57.3
Delaware	60.0	...	...	...	60.0	...	50.5	9.5
Haskell	149.4	3.4	3.4	...	146.0	85.6	30.7	29.7
Latimer	98.7	42.4	42.4	...	56.3	...	48.5	7.8
Le Flore	532.4	298.0	298.0	...	234.4	72.7	112.1	49.6
McCurtain	1,560.8	1,147.2	1,147.2	...	413.6	69.2	210.1	134.3
McIntosh	15.6	...	...	...	15.6	...	7.9	7.7
Mayes	78.2	3.2	3.2	...	75.0	...	57.3	17.7
Muskogee	86.7	...	...	...	86.7	...	24.8	61.9
Ottawa	29.6	...	...	...	29.6	...	11.1	18.5
Pittsburg	44.8	3.2	3.2	...	41.6	...	35.7	5.9
Pushmataha	608.1	452.8	452.8	...	155.3	13.5	96.1	45.7
Sequoyah	104.3	5.2	5.2	...	99.1	3.6	59.6	35.9
Total	4,016.1	1,992.7	1,992.7	...	2,023.4	325.0	1,019.6	678.8

Table 17. --Sawtimber volume by species and tree diameter, 1955-56

Species	All diameter classes	10-12 inches 1/	14-18 inches	20-24 inches	26 inches and up
	Million board feet				
Shortleaf pine 2/	1,992.7	1,019.0	912.5	61.2	...
Red oaks	445.4	131.1	214.7	67.7	31.9
White oaks	574.2	180.4	276.1	92.4	25.3
Hickory	340.4	73.8	179.6	56.4	30.6
Sweetgum and blackgum	162.8	50.6	91.2	10.9	10.1
Other hardwoods	500.6	84.7	278.4	94.7	42.8
All species	4,016.1	1,539.6	1,952.5	383.3	140.7

1/ Hardwood sawtimber volume was not tallied in trees under 11.0 inches d.b.h.
2/ Includes 107.6 million board feet of loblolly pine.

Table 18. --Sawtimber volume by species and stand size, 1955-56

Species	All stand sizes	Large sawtimber	Small sawtimber	Poletimber	Seedling and sapling	Nonstocked and other areas 1/
	Million board feet					
Shortleaf pine 2/	1,992.7	183.8	1,181.1	501.6	96.9	29.3
Red oaks	445.4	88.0	61.5	250.0	45.9	...
White oaks	574.2	28.1	111.4	252.2	170.8	11.7
Hickory	340.4	94.2	35.4	188.2	22.6	...
Sweetgum and blackgum	162.8	33.9	53.6	72.8	2.5	...
Other hardwoods	500.6	207.3	110.9	161.5	17.0	3.9
All species	4,016.1	635.3	1,553.9	1,426.3	355.7	44.9

1/ Includes areas not classified elsewhere.
2/ Includes 107.6 million board feet of loblolly pine.

Table 19. --Average sawtimber volume per acre by stand size and forest type, 1955-56

Forest type	All stand sizes	Large sawtimber	Small sawtimber	Poletimber	Seedling and sapling	Nonstocked and other areas 1/
	Board feet					
Softwood types:						
Loblolly-shortleaf pine	1,966	4,071	3,833	1,008	528	(2/)
Oak-pine	516	(2/)	2,525	488	128	...
Average	1,491	3,467	3,670	838	310	(2/)
Hardwood types:						
Oak-hickory	294	1,818	1,620	446	113	80
Elm-ash-cottonwood	3,373	4,091	7,385	(2/)	...	...
Oak-gum-cypress	1,128	3,586	1,834	728	260	165
Average	410	2,960	2,547	481	116	102
All types	713	3,125	3,475	589	148	281

1/ Includes areas not classified elsewhere.
2/ Sample too small to be reliable.

Table 20. --Hardwood sawtimber volume by log class, 1955-56

Log class	Hardwood sawtimber
	Million board feet
Standard lumber logs:	
Grade 1	94.3
Grade 2	298.0
Grade 3	1,368.0
Total	1,760.3
Tie and timber logs	263.1
All classes	2,023.4

Table 21. --Softwood sawtimber volume by log grade, 1955-56

Log grade	Softwood sawtimber
	Million board feet
Grade 1	8.6
Grade 2	259.5
Grade 3	977.3
Grade 4	747.3
All grades	1,992.7

Table 22. --Net annual growth of sawtimber and growing stock, by species group and class of timber, 1955

Class of timber	Growing stock			Sawtimber		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	Million cubic feet			Million board feet		
Sawtimber trees	40.5	23.7	16.8	245.1	153.0	92.1
Poletimber trees	66.6	17.0	49.6	...	...	...
Total	107.1	40.7	66.4	245.1	153.0	92.1

Table 23. --Net annual growth per acre of sawtimber and growing stock, by forest-type and stand-size group, 1955

Stand-size group	Growing stock			Sawtimber		
	All types	Softwood types	Hardwood types	All types	Softwood types	Hardwood types
	Cubic feet			Board feet		
Sawtimber	58	69	35	213	289	59
Poletimber	24	54	11	36	89	13
Other stand sizes	4	17	2	7	33	3
All stands	19	49	8	44	130	10

Table 24. --Annual cut of sawtimber and growing stock, by species group and class of timber, 1955

Class of timber	Growing stock			Sawtimber		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	Million cubic feet			Million board feet		
Sawtimber trees	22.9	12.8	10.1	114.7	68.1	46.6
Poletimber trees	6.0	3.8	2.2	...	...	...
Total	28.9	16.6	12.3	114.7	68.1	46.6

Table 25. --Annual cut of sawtimber and growing stock by species, 1955

Species	Growing stock	Sawtimber
	Million cu. ft.	Million bd. ft.
Pines 1/	16.6	68.1
Red oaks	4.2	15.8
White oaks	5.4	20.7
Other hard hardwoods	1.5	4.9
Sweetgum	1.0	5.2
Blackgum	.1	...
Other soft hardwoods	.1	...
All species	28.9	114.7

1/ Includes a negligible amount of redcedar.

Tables for the Ouachita Region

The following tables present statistics on the forests of the Ouachita Mountain region of east Oklahoma. The counties included are: Haskell, Latimer, Le Flore, McCurtain, and Pushmataha.

Table 26. --Commercial forest land by stand size and forest type, Ouachita region, 1955-56

Forest type	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas[1]
	Thousand acres					
Softwood types:						
Loblolly-shortleaf pine	1,024.3	54.9	323.4	463.2	176.9	5.9
Oak-pine	433.0	11.2	38.4	188.1	195.3	...
Total	1,457.3	66.1	361.8	651.3	372.2	5.9
Hardwood types:						
Oak-hickory	1,245.2	21.7	10.8	528.0	673.8	10.9
Elm-ash-cottonwood	23.6	10.5	6.6	6.5	...	...
Oak-gum-cypress	125.1	30.1	22.3	56.6	10.9	5.2
Total	1,393.9	62.3	39.7	591.1	684.7	16.1
All types	2,851.2	128.4	401.5	1,242.4	1,056.9	22.0

1/ Includes areas not classified elsewhere.

Table 27. --Total volume by class of timber and species, Ouachita region, 1955-56

Species	All timber	Growing stock				Hardwood limbs	Cull trees
		Total growing stock	Sawtimber trees		Pole-timber trees		
			Sawlog portions	Upper stems			
	Million cubic feet						
Shortleaf pine[1]	483.7	477.9	330.9	31.9	115.1	...	5.8
Red oaks	116.9	73.4	29.1	12.7	31.6	12.6	30.9
White oaks	290.7	146.5	53.8	15.4	77.3	28.3	115.9
Hickory	104.1	61.4	18.9	6.5	36.0	5.6	37.1
Sweetgum and blackgum	60.0	42.1	21.9	6.3	13.9	3.0	14.9
Other hardwoods	180.3	89.2	46.2	13.5	29.5	13.6	77.5
All species	1,235.7	890.5	500.8	86.3	303.4	63.1	282.1

1/ Includes 20.3 million cubic feet of loblolly pine and 1.4 million cubic feet of redcedar.

Table 28. --Growing stock by species and stand size, Ouachita region, 1955-56

Species	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas[1]
	Million cubic feet					
Shortleaf pine[2]	477.9	32.6	272.5	144.0	23.5	5.3
Red oaks	73.4	14.3	16.9	38.4	3.8	...
White oaks	146.5	6.5	32.8	70.9	35.9	.4
Hickory	61.4	7.1	10.0	39.4	4.9	...
Sweetgum and blackgum	42.1	8.1	14.0	20.0	...	...
Other hardwoods	89.2	34.7	21.4	30.4	2.7	...
All species	890.5	103.3	367.6	343.1	70.8	5.7

1/ Includes areas not classified elsewhere.
2/ Includes 20.3 million cubic feet of loblolly pine and 1.4 million cubic feet of redcedar.

Table 29. --Sawtimber volume by species and tree diameter, Ouachita region, 1955-56

Species	All diameter classes	10-12 inches[1]	14-18 inches	20-24 inches	26 inches and up
			Million board feet		
Shortleaf pine[2]	1,943.8	981.7	900.9	61.2	...
Red oaks	181.1	46.4	95.7	15.0	24.0
White oaks	316.4	99.9	171.5	37.0	8.0
Hickory	110.8	35.1	68.0	7.7	...
Sweetgum and blackgum	127.8	34.7	75.0	8.0	10.1
Other hardwoods	269.5	49.0	158.4	47.0	15.1
All species	2,949.4	1,246.8	1,469.5	175.9	57.2

1/ Hardwood sawtimber volume was not tallied in trees under 11.0 inches d.b.h.
2/ Includes 107.6 million board feet of loblolly pine.

Table 30. --Sawtimber volume by species and stand size, Ouachita region, 1955-56

Species	All stand sizes	Large saw-timber	Small saw-timber	Pole-timber	Seedling and sapling	Nonstocked and other areas[1]
			Million board feet			
Shortleaf pine[2]	1,943.8	183.8	1,175.9	457.9	96.9	29.3
Red oaks	181.1	43.8	41.5	87.2	8.6	...
White oaks	316.4	14.4	86.3	116.1	97.0	2.6
Hickory	110.8	21.4	24.2	61.1	4.1	...
Sweetgum and blackgum	127.8	28.7	43.6	55.5	...	...
Other hardwoods	269.5	127.2	87.0	55.3	...	...
All species	2,949.4	419.3	1,458.5	833.1	206.6	31.9

1/ Includes areas not classified elsewhere.
2/ Includes 107.6 million board feet of loblolly pine.

Table 31. --Average volume per acre of sawtimber and growing stock by forest type, Ouachita region, 1955-56

Forest type	Growing stock	Sawtimber
	Cubic feet	Board feet
Softwood types:		
Loblolly-shortleaf pine	521	1,997
Oak-pine	193	541
Average	424	1,565
Hardwood types:		
Oak-hickory	145	282
Elm-ash-cottonwood	(1/)	(1/)
Oak-gum-cypress	459	1,524
Average	196	480
All types	312	1,034

1/ Sample too small to be reliable.

Standard Tables

Tables identical in format to those that follow will be found in all State reports issued by the Forest Survey. Their purpose is to facilitate compilation of data for various States and regions.

Table I. --Land area, by major classes of land, east Oklahoma, 1955-56

Class of land	Area
	Thousand acres
Forest:	
Commercial	5,632.0
Noncommercial:	
Productive-reserved	35.8
Unproductive	81.2
Total	5,749.0
Nonforest 1/	4,049.4
Total, all classes	9,798.4

1/ Includes some acreage of water according to Survey standards of area classification but defined by the Bureau of Census as land.

Table II. --Commercial forest land area, by ownership class, east Oklahoma, 1955-56

Ownership class	Area
	Thousand acres
Federally owned or managed:	
National forest 1/	212.5
Indian	317.0
Bureau of Land Management	6.5
Other	34.1
Total	570.1
State 2/	63.2
Private:	
Farm	1,636.9
Industrial and other	3,361.8
Total	4,998.7
All ownerships	5,632.0

1/ Includes other lands administered by the Forest Service.
2/ County-owned land included with State.

Table III. --Area of commercial forest land, by major forest types, east Oklahoma, 1955-56

Forest type	Area
	Thousand acres
Loblolly-shortleaf pine	1,061.6
Oak-pine	517.1
Oak-hickory	3,686.0
Elm-ash-cottonwood	73.1
Oak-gum-cypress	294.2
Total	5,632.0

Table IV. --Net volume of live sawtimber and growing stock on commercial forest land, by stand-size class, east Oklahoma, 1955-56

Stand-size class	Sawtimber	Growing stock
	Million board feet	Million cubic feet
Sawtimber stands	2,189.2	556.9
Poletimber stands	1,426.3	615.9
Seedling and sapling stands	355.7	131.5
Nonstocked and other areas not elsewhere classified	44.9	11.9
Total	4,016.1	1,316.2

Table V. --Net volume of live sawtimber and growing stock on commercial forest land, by ownership class, east Oklahoma, 1955-56

Ownership class	Sawtimber	Growing stock
	Million board feet	Million cubic feet
Federally owned or managed:		
National forest 1/	420.2	108.9
Indian	107.4	42.7
Bureau of Land Management	...	.6
Other	1.6	1.0
Total	529.2	153.2
State 2/	21.7	6.2
Private:		
Farm	677.5	294.4
Industrial and other	2,787.7	862.4
Total	3,465.2	1,156.8
All ownerships	4,016.1	1,316.2

1/ Includes other lands administered by the Forest Service.
2/ County-owned land included with State.

Table VI. --Net volume of live sawtimber and growing stock on commercial forest land, by species, east Oklahoma, 1955-56

Species	Sawtimber	Growing stock
	Million board feet	Million cubic feet
Softwoods:		
Shortleaf and loblolly pines	1,992.7	492.7
Other eastern softwoods	...	1.9
Total	1,992.7	494.6
Hardwoods:		
White oak (Q. alba)	101.8	45.7
Red oaks (Q. rubra, shumardii, and falcata var. pagodaefolia)	80.4	28.4
Other white oaks	472.4	222.6
Other red oaks	365.0	156.6
Soft maples	13.1	5.8
Sweetgum	78.5	36.0
Blackgum	84.3	22.1
Ash	74.1	30.0
Hickory	340.4	137.7
Cottonwood	62.5	16.6
Basswood	3.0	1.3
Black walnut	3.1	1.3
Other eastern hardwoods	344.8	117.5
Total	2,023.4	821.6
All species	4,016.1	1,316.2

Table VII. --Net volume of live sawtimber on commercial forest land, by diameter class groups and species, east Oklahoma, 1955-56

Species	Diameter class groups						
	10 inches	12 inches	14 inches	16 inches	18 inches	20 inches and up	Total
	Million board feet						
Southern yellow pines	566.0	453.0	455.7	331.0	125.8	61.2	1,992.7
Other eastern softwoods	...	...	...	...	...	...	...
White oak (Q. alba)	...	43.3	22.2	25.5	7.1	3.7	101.8
Other white oaks	...	137.1	95.0	70.1	56.2	114.0	472.4
Red oaks (Q. rubra, falcata var. pagodaefolia & shumardii)	...	9.1	14.1	30.1	5.7	21.4	80.4
Other red oaks	...	122.0	82.4	51.5	30.9	78.2	365.0
Sweetgum	...	31.3	20.4	10.9	2.9	13.0	78.5
Blackgum	...	19.3	19.1	22.4	15.5	8.0	84.3
Other eastern hardwoods	...	158.5	192.1	164.1	101.8	224.5	841.0

Table VIII. --Net volume of all timber on commercial forest land, by class of material and species group, east Oklahoma, 1955-56

Class of material	Total	Softwoods	Hardwoods
	Million cubic feet		
Growing stock:			
Sawtimber trees:			
Sawlog portion	679.6	339.7	339.9
Upper stem portion	139.9	32.9	107.0
Total	819.5	372.6	446.9
Poletimber trees	496.7	122.0	374.7
Total growing stock	1,316.2	494.6	821.6
Other material:			
Sound cull trees	578.0	6.6	571.4
Rotten cull trees	124.5	.4	124.1
Hardwood limbs	157.8	...	157.8
Salvable dead trees	3.8	.2	3.6
Total other material	864.1	7.2	856.9
Total, all timber	2,180.3	501.8	1,678.5

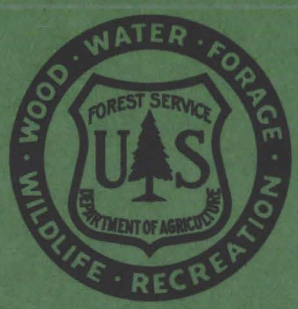
Table IX. --Net annual growth, annual mortality, and annual cut of live sawtimber and growing stock on commercial forest land, by species group, east Oklahoma, 1955

Item	Sawtimber			Growing stock		
	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods
	Million board feet			Million cubic feet		
Net annual growth	245.1	153.0	92.1	107.1	40.7	66.4
Annual mortality	37.3	14.0	23.3	15.1	3.7	11.4
Annual cut						
Timber products	110.8	66.9	43.9	24.9	15.3	9.6
Logging residues	3.9	1.2	2.7	4.0	1.3	2.7
Total annual cut	114.7	68.1	46.6	28.9	16.6	12.3

Table X. --Output of timber products and annual cut of live sawtimber and growing stock, east Oklahoma, 1955

Product	Output of timber products					Annual cut of sawtimber			Annual cut of growing stock		
	Volume in standard units		Roundwood volume								
	Standard units	Number	Total	Soft-woods	Hard-woods	Total	Soft-woods	Hard-woods	Total	Soft-woods	Hard-woods
			Thousand cubic feet			Thousand board feet			Thousand cubic feet		
Sawlogs	MBM[1]	82,500	13,720	10,560	3,160	79,900	60,390	19,510	16,070	11,620	4,450
Cooperage logs and bolts[2]	MBM[1]	4,070	570	...	570	4,530	...	4,530	840	...	840
Pulpwood	Std. cords[3]	4/38,070	2,880	2,540	340	3,780	3,030	750	2,520	2,180	340
Fuelwood	Std. cords[3]	5/198,000	14,860	1,030	13,830	14,900	1,860	13,040	4,470	400	4,070
Piling	M linear feet	30	20	20	...	100	100	...	20	20	...
Poles	M pieces	60	420	420	...	2,410	2,410	...	500	500	...
Posts	M pieces	5,130	3,050	2,010	1,040	3,490	270	3,220	2,860	1,920	940
Hewn ties	M pieces	20	170	...	170	1,280	...	1,280	300	...	300
Mine timbers	M pieces	110	60	...	60	...	...	...	70	...	70
Miscellaneous[6]	M cu. ft.	7/ 680	680	...	680	4,310	...	4,310	1,290	...	1,290
Total			36,430	16,580	19,850	114,700	68,060	46,640	28,940	16,640	12,300

1/ International 1/4-inch rule.
2/ Includes veneer logs and bolts in order not to disclose individual plant data.
3/ Rough-wood basis.
4/ Not including negligible amount of wood from mill residues used for pulp.
5/ Not including 4.9 million cubic feet of wood from mill residues used for domestic and industrial fuel.
6/ Includes handle stock and other miscellaneous products.
7/ Not including 0.2 million cubic feet of wood from mill residues used for miscellaneous products.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